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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,505	03/26/2004	Eri Kojima	5271-0113PUS1	8177
2292 7590 08/29/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER ALEJANDRO, RAYMOND	
			ART UNIT 1745	PAPER NUMBER
			NOTIFICATION DATE 08/29/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/810,505

Applicant(s)

KOJIMA ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 1-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This office action is responsive to the amendment filed 07/25/07. The applicant has overcome the objections and the 35 USC 112 rejections. None of the prior art rejections has been satisfactorily overcome. Refer to the abovementioned amendment for specific details on applicant's rebuttal arguments and remarks. Therefore, the present claims (including new claim 33) are finally rejected over the previous ground of rejection and new art as set forth hereinbelow and for the reasons of record:

Election/Restrictions

1. This application contains claims 1-19 drawn to an invention nonelected without traverse in the reply filed on 04/01/07. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action.

Claim Objections

2. Claims 25-27 and 29-32 are objected to because of the following informalities: their dependency on non-elected claim 19 should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 20-21, 23, 25-26 and 29-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Tamura et al 2003/0180619.

The present claims are geared toward a non-aqueous secondary battery wherein the disclosed inventive concept comprises the specific intermetallic compound active material and the protective layer.

As to claims 20 and 33 (see additional disclosure below for other limitations of claim 33):

Tamura et al disclose a rechargeable non-aqueous lithium battery comprising an anode, a cathode and a non-aqueous electrolyte (P0020/CLAIM 18). The negative electrode has a current collector and a thin alloy film provided thereon and composed of a metal which alloys with Li such as Sn, Ge, In, Al, Si and like (CLAIM 1/P0008) and a metal which does not alloy with Li such as Cu, Fe, Ni, Mn, Co, Mo, W, Ti, Zr and the like (P0009-0010/ CLAIM 1). The thin alloy film forms an intermetallic compound useful as the active material (P0008, ABSTRACT).

Tamura et al specifically exemplifies intermetallic compounds formed of an alloy of Sn-Co, Sn-Ni, Sn-Fe, Sn-Pb and Sn-Zn (P0048, 0059-0063/TABLE 3-4) and Sn-Ni-Co (P0074-0075).

Further disclosed is the formation of a mixed layer components of the current collector and the alloy at an interface between the current collector and the thin film alloy (P0019/See CLAIM 17). *Since the mixed layer is formed of components of either or both the current collector and the alloy film, it is to be noted that it contains at least one of Ti, Ni, Zr, and/or W.*

As to claims 21, 29 and 33:

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The specific X-ray diffraction measurement is deemed to be an inherent characteristic or property of the negative electrode components. Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property (i.e. X-ray diffraction measurement), is necessarily present in the prior art material.

“Products of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

See MPEP 2112.01 [R-3] Composition, Product, and Apparatus Claims

As to claims 23 and 33:

Further disclosed is the formation of a mixed layer components of the current collector and the alloy at an interface between the current collector and the thin film alloy (P0019/See CLAIM 17). *Since the mixed layer is formed of components of either or both the current collector and the alloy film, it is to be noted that it contains at least one of Ti, Ni, Zr, and/or W.*

As to claims 25-26 and 33:

Element which does not alloy with Li are Cu, Fe, Ni, Mn, Co, Mo, W, Ti, Zr and the like (P0009-0010/ CLAIM 1).

As to claims 30-31:

Thickness of the thin alloy film is about 2 μm (P0031, 0059, 0069-0070, 0074/See EXPERIMENTS 1-5). *Thickness is taught with sufficient specificity.*

As to claim 32:

Current collector is made of C, Ni, Ti, and/or Fe (P0012/P0031, 0059, 0069-0070).

Thus, the present claims are anticipated.

5. Claim 33 is rejected under 35 U.S.C. 102(e) as being anticipated by the publication WO 02/25757 (heretofore the WO'757) [*Note: Tamura et al 2003/0180619 is an English language equivalent version of the WO'757 as it belongs to the same patent family. Thus, for purpose of rejection, Tamura et al is cited hereinbelow*].

As to claim 33:

Tamura et al disclose a rechargeable non-aqueous lithium battery comprising an anode, a cathode and a non-aqueous electrolyte (P0020/CLAIM 18). The negative electrode has a current collector and a thin alloy film provided thereon and composed of a metal which alloys with Li such as Sn, Ge, In, Al, Si and like (CLAIM 1/P0008) and a metal which does not alloy with Li such as Cu, Fe, Ni, Mn, Co, Mo, W, Ti, Zr and the like (P0009-0010/ CLAIM 1). The thin alloy film forms an intermetallic compound useful as the active material (P0008, ABSTRACT).

Tamura et al specifically exemplifies intermetallic compounds formed of an alloy of Sn-Co, Sn-Ni, Sn-Fe, Sn-Pb and Sn-Zn (P0048, 0059-0063/TABLE 3-4) and Sn-Ni-Co (P0074-0075).

Further disclosed is the formation of a mixed layer components of the current collector and the alloy at an interface between the current collector and the thin film alloy (P0019/See CLAIM 17). *Since the mixed layer is formed of components of either or both the current collector and the alloy film, it is to be noted that it contains at least one of Ti, Ni, Zr, and/or W.*

The specific X-ray diffraction measurement is deemed to be an inherent characteristic or property of the negative electrode components. Accordingly, products of identical chemical

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composition cannot have mutually exclusive properties, and thus, the claimed property (i.e. X-ray diffraction measurement), is necessarily present in the prior art material.

“Products of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

See MPEP 2112.01 [R-3] Composition, Product, and Apparatus Claims

Further disclosed is the formation of a mixed layer components of the current collector and the alloy at an interface between the current collector and the thin film alloy (P0019/See CLAIM 17). *Since the mixed layer is formed of components of either or both the current collector and the alloy film, it is to be noted that it contains at least one of Ti, Ni, Zr, and/or W.*

Element which does not alloy with Li are Cu, Fe, Ni, Mn, Co, Mo, W, Ti, Zr and the like (P0009-0010/ CLAIM 1).

Thus, the present claim is anticipated.

6. Claims 20-22 and 24-32 are rejected under 35 U.S.C. 102(b) as being anticipated by the Publication “*Study on the anode behavior of Sn and Sn-Cu alloy thin film electrodes*” by Tamura et al (herein called Tamura et al). [**Note:** Tamura et al was published in 2002, see front page thereof and as annotated by the applicant on page 2 of the 06/25/04 IDS. Thus, Tamura et al is a 102(b) reference with respect to applicant’s effective filing date of 03/26/04].

As to claims 20 and 22:

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Tamura et al disclose Li-ion batteries comprising an anode, a cathode and a non-aqueous electrolyte (See **1. Introduction & 2.4 Preparation of a Small Cell**). **Figure 8(b)** of Tamura et al illustrates an anode structure comprising a Cu-foil (the current collector) and a Cu-Sn-like phase first layer, and a Cu_6Sn_5 second phase layer (See **FIGURE 8(b)**). Specifically, Tamura et al reported the formation of at least 2 layers including different phases of an intermetallic compound of Sn-Cu (See **3.3 Heat Treatment effects on the structures of the active materials**). *In this case, the Cu_6Sn_5 second phase layer represents the active material layer and the Cu-Sn-like phase first layer represents the protective layer. The Sn-Cu phase layers have different compositions.*

As to claims 21 and 29:

The specific X-ray diffraction measurement is deemed to be an inherent characteristic or property of the negative electrode components. Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property (i.e. X-ray diffraction measurement), is necessarily present in the prior art material.

"Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

See MPEP 2112.01 [R-3] Composition, Product, and Apparatus Claims

As to claim 24:

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Tamura et al reported thicknesses of less than 0.5 μ m or less than 500 nm (See description of FIGURE 8, at the bottom of page 52 & 3.3 Heat Treatment effects on the structures of the active materials).

As to claims 25-26:

Tamura et al employ Cu as the element that does not substantially react with Li (See FIGURE 8(b), 3.3 Heat Treatment effects on the structures of the active materials and TITLE)

As to claims 27-28:

Tamura et al shows a Cu₆Sn₅ second phase layer (See 3.3 Heat Treatment effects on the structures of the active materials and FIGURE 8(b)).

As to claims 30-31:

Tamura et al reported thickness of 0.5 μ m and 2 μ m (See 2.1 Preparation of an electrodeposited tin anode without/with heat treatment; 2.4 Preparation of a Small Cell & 3.3 Heat Treatment effects on the structures of the active materials)

As to claims 32:

Tamura et al use a Cu-foil as the current collector (See 3.3 Heat Treatment effects on the structures of the active materials; 1.Introduction on page 49 and FIGURE 8(b))

Thus, the present claims are anticipated.

Response to Arguments

7. Applicant's arguments filed 07/25/07 have been fully considered but they are not persuasive.

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8. The main contention of applicant's arguments is centered on the assertion that the prior art "*fails to disclose the claimed feature of protective layer for preventing a reaction between the active material layer and the collector*". However, this assertion is found unconvincing by the Examiner for the same reasons that applicant has expressed about the gradual reaction between the active material layer and the collector occurring during the progression of a charging-discharging cycle (See entire paragraph bridging pages 14-15 of the 07/25/07 amendment). Accordingly, at a minimum, the protective layer which is present in the prior art of record as the mixed layer identified by the Examiner satisfies the function of "gradually" preventing the reaction between the active material layer and the collector. Applicant's invention, as functionally recited in the present claims, in no way clearly stipulates the degree for preventing the reaction; applicant's invention merely calls for a protective layer "capable of" preventing (minimizing) a reaction between the active material layer and the collector. As such, the Examiner is still of the view that the prior art protective layer comprising a mixed layer is capable of achieving the function claimed by the applicant because such a mixed layer contains Ti, Ni, Zr and/or W, and even though it does not "*completely*" prevent the reaction between the active material layer and the collector, it does "*gradually*" prevent or minimize that reaction during charging/discharging cycles due to the degree of separation between the active material layer and the collector provided by the mixed layer interposed therebetween. Thus, since the mixed layer is sandwiched by the active material layer and the collector, it can be fairly stated that the mixed layer prevents a direct interaction between the active material layer and the collector; therefore, reaction between these components is also prevented. This also applies with equal force to all the arguments advanced by the applicant concerning how representative

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Comparative Example 1 is with respect to the claimed invention (See page 15 of the 07/25/07 amendment) and applicant's discussion of Tamura et al on page 17 of the 07/25/07 amendment (the basis for the second 102 rejection, item 11 of the 04/25/07 Office Action).

In this respect, applicant is reminded that "*Arguments that the alleged anticipatory prior art is nonanalogous art' or teaches away from the invention' or is not recognized as solving the problem solved by the claimed invention, [are] not germane' to a rejection under section 102.*"

Twin Disc, Inc. v. United States, 231 USPQ 417, 424 (Cl. Ct. 1986) (quoting In re Self, 671 F.2d 1344, 213 USPQ 1, 7 (CCPA 1982)). See also State Contracting & Eng' g Corp. v. Condotte America, Inc., 346 F.3d 1057, 1068, 68 USPQ2d 1481, 1488 (Fed. Cir. 2003) (*See MPEP 2131.05 Nonanalogous or Disparaging Prior Art*).

9. Applicant's arguments concerning the formation of the mixed layer including heat treatment or the like (see page 14 of the 07/25/07 amendment) is completely irrelevant to the patentability of the present claims because the present claims are directed to a product per se (i.e. the non-aqueous secondary battery) and the method of making it does not further define patentable subject matter of a product.

10. In response to applicant's arguments concerning the representation of EXAMPLE 1 and its improved and excellent properties when compared to Tamura et al (page 16 of the 07/25/07 amendment), it is to be noted that such an example includes specific compositional materials or constituents, configuration and/or arrangements not actually recited in at least independent claim 20. Thus, the evidence or argument advanced by the applicant is not fully commensurate in scope with the claimed invention. Additionally, any assertion of expected or superior results is

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ineffective to overcome a rejection based on a 102 anticipatory analysis, *In re Wiggins*, 488 F.2d 538, 543, 179 USPQ 421, 425 (CCPA 1973) (*See MPEP 2131.04 Secondary Considerations*).

11. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *the thickness of the collector does not change or decrease*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The claimed subject matter of at least independent claim 20 is entirely silent about any unchanged or not-decreased thickness of the collector.

12. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

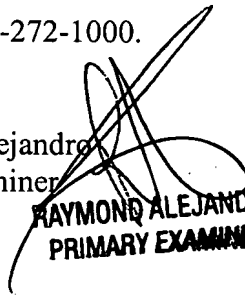
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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745

**RAYMOND ALEJANDRO
PRIMARY EXAMINER**